Notes on some rare plant collections from the southern Coromandel Coast, India

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Abstract

A pilot survey was made in seven coastal districts along the Coromandel Coast of Tamil Nadu to know the status of rare and endemic plants. In which six taxa viz. Actinoscirpus grossus and Cyperus clarkei of Cyperaceae, Capparis divaricata of Capparaceae, Falconeria insignis of Euphorbiaceae, Limnophila repens of Scrophulariaceae and Utricularia hirta of Lentibulariaceae were identified as rare showing distributional importance. Nomenclature, description, phenology, distribution status of the state, habitat and notes were provided for easy understanding of the species. Conservation measures targeted at the endemic and threatened plants of an ecosystem will prevent destruction of natural vegetation and efforts must be taken to protect the biodiversity in an area by involving the local communities in preservation and conservation aspects.

Keywords: Conservation, Coromandel Coast, Tropical forest, Endemic, Rare plants, India

1. Introduction

The tropical dry evergreen forests (TDEFs) are unique biotic communities and geographically restricted to Jamaica, Thailand, Sri Lanka and the Coromandel Coast of India (Selwyn and Parthasarathy 2007). In India TDEFs are unique forest types extending to about 50km inland along the East Coast of Peninsular India from Visakhapatnam, Andhra Pradesh in north and Tirunelveli, Tamil Nadu in south (Mani and Parthasarathy 2005). In the recent past, this ecosystem has been highly disturbed by various human activities and facing local population extinctions. The biodiversity, structure and dynamics of the forest type, especially the groves have been extensively studied (Parthasarathy and Karthikeyan 1997; King 1997; Parthasarathy and Sethi 1997; Ramanujam and Kadamban 2001; Ramanujam and Praveen 2003; Parthasarathy et al., 2008; Praveen 2011). Though, detailed biodiversity inventories of threatened tropical ecosystems such as exploration of poorly known rare and endemic plants of TDEFs are needed to draw up conservation strategies for those plants.
Studies indicated that, wild and virgin habitats are in gradual process of disturbance and leads to extinction of species (Babar et al., 2012). Thus, identifying the habitat, population and distribution status of rare, endangered and endemic species to each and every habitats is now becomes essential. TDEF belt harbors several remnant patches of sacred vegetation which are conserved or maintained as “sacred groves” through faith and belief system of local communities in these areas. This vegetation type facing various levels of anthropogenic pressures, disturbance and the impact of cultural changes on the vegetation has studied by Kadamban (1998) and Praveen (2011) in Tamil Nadu. Recently, Balachandran and Rajendiran (2014) and Balachandran et al. (2014) discussed about the disjunct distribution of endemic and Indo-Sri Lankan elements from the TDEF's Coromandel Coast of north Tamil Nadu.

Keeping these points, we carried out an explorative study to know about the occurrence of rare and endemic plant species found along the district of Coromandel Coastal of Tamil Nadu and to assess their population, distribution, habitat, their major associated plants and threat status.

2. Materials and methods

The present study was carried out randomly in different districts, habitats and elevation along the Coromandel Coastal plain areas of Tamil Nadu between 10o 07’ to 13o 31’ N latitudes and 77o 50’ to 78o 29’ E longitudes (Fig. 1). There are 13 districts of Tamil Nadu are found along the east coast, of which Kancheepuram, Villupuram, Cuddalore, Nagapattinam, Pudukkottai, Thanjavur and Thiruvarur districts were surveyed in the present study. These areas were prevailed in tropical climate with mean temperature of about 27°C and average rainfall about 950mm with an average of 50 rainy days. It was noted that, these regions were also characterized by a hot, maritime climate experiencing a narrow daily range of temperature, humid weather and moderate rainfall (Parthasarathy & Karthikeyan 1997). There is no clear demarcation of seasons. Geographically these coastal areas have plains, undulating terrain and rarely with scattered hillocks. Sandy, clay, alluvial, red ferralic, and black cotton are the major soil types found across this region. This stretch has been housing tropical dry evergreen, mixed deciduous, dry deciduous, thorny scrub and mangroves forests.

![Fig. 1. Location map of coastal districts in Coromandel Coast of Tamil Nadu, India](image)

The survey was conducted between 2010 and 2014 and plant specimens were collected and prepared into herbarium using standard methods. The plant specimens were identified using relevant literatures and the rare plants were confirmed with Madras Herbarium (MH) and
Rapinat Herbarium, Tiruchirappalli (RHT). The well prepared herbarium sheets were deposited in the herbarium of Botany Department, St. Joseph’s College, Tiruchirappalli for future reference.

3. Results and Discussion
Through our extensive field study for exploration of plant diversity studies, we have documented more than 600 species of plants spread over the plains of coastal districts. Most of these documented plants were used by the local people of the study area for the treatment of different illnesses. Interesting feature of the study was that, we have recorded six species as rare and endemic plants based on their occurrence, population, number of individuals and etc. Floristic exploration and scrutinizing the interesting plants in our existing herbarium collections has revealed their status as rare plants with distributional importance.

They are Actinoscirpus grossus (L. f.) Goetgh. & D.A. Simpson and Cyperus clarkei T. Cooke of Cyperaceae, Capparis dioica Lam. of Capparaceae, Falconeria insignis Royle of Euphorbiaceae, Limnophila repens (Benth.) Benth. of Scrophulariaceae and Utricularia hirta Klein ex Link of Lentibulariaceae. The detailed information about the updated nomenclature with synonyms, brief description, phenology, distribution, conservation status, local uses and relevant notes of these species were given in alphabetical order of species name along with photographs.

3.1. Taxonomic treatment

Family: Cyperaceae

Taxonomic description: Annual herb; culms tufted, up to 2 m high. Leaves 30-50 x 0.5-1.5 cm. Inflorescence terminal, decompound, up to 10 cm long. Leafy bracts 3-5, up to 50 cm long. Spikelets solitary, subglobose, terete, fuscous. Glumes oblong-obovate. Stamens 3, anther linear, 1.5 cm long, reddish-brown. Ovary ovoid, c. 0.5 mm long, style flat, hypogynous bristles 5-6, brownish, scabrous and hairy. Nut ovoid, trigonous, brown.

Specimens examined: Tamil Nadu, Kancheepuram District, Orakadam, 15-12-2011, Dhatchanamoorthy, N. SJC BOT 1125.

Flowering and Fruiting: November – March.

Distribution in Tamil Nadu: Salem and Tiruchirapalli (Henry et al. 1989), South Arcot (Matthew 1981), now recorded from Kancheepurum.

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Habitat: Wet localities, stream banks and river side; growing with Cyperus corymbosus Rottb., Lemma perpusilla Torr. and Ludwigia peruviana (L.) H. Hara.
Notes: Plants were used for thatching by local people and the greenish-white inflorescences and spikelets looks similar to Sorghum. The present collection is the first record from the Coromandel Coast of Tamil Nadu. It is native to Southeast Asia and naturalized elsewhere.
Conservation status: Least Concern ver 3.1

Family: Cyperaceae
Taxonomic description: Perennial herb, rhizome globose, stolons slender, culms obtusely triangular, glabrous. Leaves shorter than the culms, some time longer. Inflorescence cluster, congested, c 5 cm long; bracts 5-9, reflexed; spikes cylindrical, longer or shorter. Spikelets elliptic-lanceolate, c 3 mm long; glumes ovate or narrow, c 3 mm long. Stamens 2; anther ovoid, 1 mm long. Ovary ovoid-ellipsoid, 0.5 mm long; style 3-cleft, filiform. Nut oblong-elliptic, trigonous.
Specimens examined: Tamil Nadu, Kancheepuram district, 8-10-2010, Dhatchanamoorthy, N. SJCBOT1120, Villupuram district, Gingee, near Pudupatti village, 22-10-2010, Dhatchanamoorthy, N., SJCBOT1181.
Flowering and Fruiting: September – February.
Habitat: scrub jungle, rocky slope and rocky plains; growing with Blepharis repans, Indigofera aspalathoides, I. glabra, Lepidagathis cristata, Tephrosia purpurea and T. villosa.
Distribution in Tamil Nadu: Salem and Tiruchrappalli.
Notes: Britto and Matthew (1983) deposited two sheets RHT (Acc.) 17769 and 17830 from Salem and Tiruchrappalli. In the present survey, the plant was collected from Kancheepuram and Villupuram districts as new record to Coromandel Coast of Tamil Nadu.
Conservation status: Least Concern ver 3.1

Family: Capparaceae
**Taxonomic description:** Shrub or straggling shrub, 3-5 m tall; young stem stellate pubescent, thorns recurved. Leaves simple, alternate, linear, elliptic-lanceolate, 3.5-4.5 x 3-2 cm, cuneate at base, entire at margin, acute at apex; petiole 3 cm long. Flowers solitary, axillary, c. 3.5 cm across; pedicel 1.5 cm long. Sepals 4, elliptic-ovulbar; corolla imbricate; petals 4, oblong-lanceolate to linear, undulate at margin, acute at apex, greenish white with yellow shade. Stamens ca. 50; filament filiform, 2.5 cm long; anther ovoid, 3 mm long. Gynophores 2.2 cm long. Ovary subglobose, 5.8 mm long; 1-celled; ovules many. Berries broadly globose, 3.8 cm across, ribbed, glabrous.

**Specimens examined:** Kancheepuram district, Thirukazhukundram, 08-05-2013, Dhatchanamoorthy. N, SJC BOT1287.

**Distribution in Tamil Nadu:** Coimbatore, Dharmapuri, Madurai, Chengalpet, Thanjavur, Salem, Tiruchirappalli and Tirunelveli. The preset collection from Kancheepuram district turns to be the first record from north Tamil Nadu.

**Habitat:** Scrub jungles, thickets, tropical dry evergreen forests, deciduous forests from sea level to 300 m.

**Flowering:** April – June & **Fruiting:** August – November.

**Notes:** This species was recorded as rare in scrub forests, Eastern Ghats of Andhra Pradesh (Pullaiyah et al., 2010). The earlier reports (Nair and Henry 1983) and recent studies revealed that (Narasimhan 1992; Parthasarathy and Karthikeyan 1997; Venkateswaran and Parthasarathy 2003; Udayakumar and Parthasarathy 2010; Gnanasekaran et al. 2012; Nehru et al., 2012) this might be the first record to northern Coromandel Coast of Tamil Nadu.

### 3.1.4. Falconeria insignis


**Family:** Euphorbiaceae

**Taxonomic description:** Tree, grows up to 6-9 m height. Bark greyish-black, smooth. Leaves alternate, ovate-elliptic, oblong-lanceolate, shortly serrate, crenate-dentate, some time entire, folded at margin, acuminate at apex, coriaceous. Inflorescence sessile, slender, erect terminal, sometime axillary, up to 18 cm long. Male flowers globose, cluster. Female flowers solitary, up to 2.8 cm long; bracts ovate, glandular at base. Sepals broadly ovate-triangular, c. 2.5 cm long. Ovary ovoid-subglobose; style short, slender; stigma sessile. Capsules globose, depressed, shortly-deeply 3-lobed.

**Specimens examined:** Tamil Nadu, Nagapattinam district, 15-12-2010, Dhatchanamoorthy, N. SJC BOT1110.

**Flowering and Fruiting:** December - July.

**Habitat:** Sandy localities and scrub jungles.
Distribution in Tamil Nadu: Kancheepuram, Nilgiris, Tiruchirappali, Dharmapuri, Salem and Kanyakumari.

Notes: This species commonly found in tropical and subtropical forests up to 2000 m above mean sea level (Matthew, 1983; Henry et al., 1987; Balakrishnan et al., 2012). So far it was reported only from the hilly districts of Tamil Nadu whereas, the present collection was from Nagapattinam district as new record to TDEFs along the Coromandel of Tamil Nadu.


Family: Scrophulariaceae

Taxonomic description: Herb grows up to 20 cm height; stem angled, glabrous. Leaves opposite, decussate, sessile, elliptic, linear-lanceolate, 10-30 x 9-12 mm, attenuate, sub-amplexicaule at base, serrate at base, acute-obtuse at apex, 3-4 pairs, minutely hispid or glabrous. Flowers solitary, axillary in racemes axillary; pedicel filiform, c 3 mm long, hispid. Bract and bracteole subulate-ovate, c 2.5 mm long, hairy or glabrescent. calyx 5-lobed; lobe lanceolate-elliptic, 1.7 mm long, ciliate at margin, acuminate at apex, hairy. Corolla 5-lipped; pink or purple often blue; lip elliptic-oblung, c 7 mm long, glabrous, backward, white, villous inside. Capsule ovate-subglobose, 2.5-4 mm long; seeds many, minutely ovoid.

Specimens examined: Tamil Nadu, Pudukottai District, 11-12-2013, Dhatchanamoorthy, N. SJC BOT1211.

Flowering and fruiting: November – March.

Habitat: Rocky and marshy localities; growing with Najas gramenaria. Rare

Distribution in Tamil Nadu: Coimbatore and Tiruchirappalli.

Notes: This highly variable aquatic herb was reported by Gamble (l.c.) from Western Ghats (Coimbatore). After a long gap Matthew (1983) collected this species from Tiruchirappalli. The present collection was from rocky area of Iyarmalai, Pudukkottai district was first report for the Coromandel Coast and also distribution of this species is disjunct and fragile.

Conservation status: Least Concern ver 3.1


Family: Lentibulariaceae

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**Taxonomic description:** Stoloniferous herb. Foliar organs linear, glandular. Traps c 0.2-0.3 mm long, globose-subglobose. Racemes 7-15 cm long, filiform, densely glandular hairy. Flowers c 7 mm across, pink; bracts linear-lanceolate, pubescent. Calyx-lobes unequal, c 1.5 mm long. Emarginated-retuse at apex. Corolla pink often light violet; spur 3-5 mm long, subulate, curved at apex. Stamens ovoid, c. 0.2 mm long; stigma 2-lipped, ovoid-subglobose. Capsules subglobose, c. 1.6 mm long; seeds ovoid, circular, c 0.2 mm long.

Specimen examined: Tamil Nadu, Pudukottai District, Iyarmalai, 11.12.2013, Dhatchanamoorthy, N., 1212 SJC BOT.

**Flowering and Fruiting:** August - February.

**Habitat:** The plant is densely growing in wet rocky places along with Utricularia caerulea, Utricularia polygaloids, Limnophila indica, Rotala indica and Rotala fimbriata.

**Distribution in Tamil Nadu:** North Arcot, South Arcot and Tiruchirappalli.

**Notes:** The present collection is from Iyarmalai in Pudukottai district is an addition for the Coromandel Coastal flora.

4. Conclusion

Efforts must be taken to protect the biodiversity in an area by involving the local communities in preservation and conservation aspects. Conservation measures targeted at the endemic and threatened plants as well as most important medicinal plants of an ecosystem will prevent destruction of natural vegetation (Ayyanar et al., 2014). Conservationists in the recent years view local peoples' support for protected areas management as an important element of biodiversity conservation. As suggested by Arjunan et al. (2006) and Annamalai (2004), eco-development projects should be carefully designed to attain particular conservation objectives among communities living adjacent to or within critical ecosystems. Since local communities received benefits from the eco-development project conducted by them and this would helped to identify the main concerns of the local communities, and assisted in designing a more effective intervention program.

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**Conflict of interest statement**

We declare that we have no conflict of interest.

**References**


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